frequency bands may include (but are not limited to) Long Term Evolution (LTE) (B17 (DL:734-746 MHz; UL:704-716 MHz), B5 (DL:869-894 MHz; UL: 824-849 MHz), B20 (DL: 791-821 MHz; UL: 832-862 MHz), B8 (925-960 MHz; UL: 880-915 MHz) B13 (DL: 746-756 MHz; UL: 777-787 MHz), B28 (DL: 758-803 MHz; UL: 703-748 MHz), B7 (DL: 2620-2690 MHz; UL: 2500-2570 MHz), B38 (2570-2620 MHz), B40 (2300-2400 MHz) and B41 (2496-2690 MHz)), amplitude modulation (AM) radio (0.535-1.705 MHz); frequency modulation (FM) radio (76-108 MHz); Bluetooth (2400-2483.5 MHz); wireless local area network (WLAN) (2400-2483.5 MHz); hiper local area network (HiperLAN) (5150-5850 MHz); global positioning system (GPS) (1570.42-1580.42 MHz); US-Global system for mobile communications (US-GSM) 850 (824-894 MHz) and 1900 (1850-1990 MHz); European global system for mobile communications (EGSM) 900 (880-960 MHz) and 1800 (1710-1880 MHz); European wideband code division multiple access (EU-WCDMA) 900 (880-960 MHz); personal communications network (PCN/DCS) 1800 (1710-1880 MHz); US wideband code division multiple access (US-WCDMA) 1700 (transmit: 1710 to 1755 MHz, receive: 2110 to 2155 MHz) and 1900 (1850-1990 MHz); wideband code division multiple access (WCDMA) 2100 (transmit: 1920-1980 MHz, receive: 2110-2180 MHz); personal communications service (PCS) 1900 (1850-1990 MHz); time division synchronous code division multiple access (TD-SCDMA) (1900 MHz to 1920 MHz, 2010 MHz to 2025 MHz), ultra wideband (UWB) Lower (3100-4900 MHz); UWB Upper (6000-10600 MHz); digital video broadcasting-handheld (DVB-H) (470-702 MHz); DVB-H US (1670-1675 MHz); digital radio mondiale (DRM) (0.15-30 MHz); worldwide interoperability for microwave access (WiMax) (2300-2400 MHz, 2305-2360 MHz, 2496-2690 MHz, 3300-3400 MHz, 3400-3800 MHz, 5250-5875 MHz); digital audio broadcasting (DAB) (174.928-239.2 MHz, 1452.96-1490.62 MHz); radio frequency identification low frequency (RFID LF) (0.125-0.134 MHz); radio frequency identification high frequency (RFID HF) (13.56-13.56 MHz); radio frequency identification ultra high frequency (RFID UHF) (433 MHz, 865-956 MHz, 2450 MHz).

[0052] A frequency band over which an antenna can efficiently operate using a protocol is a frequency range where the antenna's return loss is less than an operational threshold. For example, efficient operation may occur when the antenna's return loss is better than (that is, less than) −4 dB or −6 dB.

[0053] The circuitry **16** may include processing circuitry, memory circuitry and input/output devices such as an audio input device (a microphone for example), an audio output device (a loudspeaker for example), a display and a user input device (such as a touch screen display and/or one or more buttons or keys).

[0054] The antenna arrangement **12** and the electronic components that provide the radio frequency circuitry **14** and the circuitry **16** may be interconnected via the ground member **18** (for example, a printed wiring board). The ground member **18** may be used as a ground plane for the antenna arrangement **12** by using one or more layers of the printed wiring board. The one or more layers of the printed wiring board may not be entirely dedicated as a ground plane so only a portion of one or more layers of the printed wiring board may be utilized as at least a part of the ground plane. In other embodiments, some other conductive part of the electronic device **10** (a battery cover or a chassis within the interior of the cover **20** for example) may be used as the ground member **18** for the antenna arrangement **12**. In some examples, the ground member **18** may be formed from several conductive parts of the electronic device **10**, one part which may include the printed wiring board. The ground member **18** may be planar or non-planar.

[0055] The cover **20** has an exterior surface that defines one or more exterior visible surfaces of the electronic device **10** and also has an interior surface that defines a cavity configured to house the electronic components of the electronic device **10** such as the radio frequency circuitry **14**, the circuitry **16** and the ground member **18**. As described in greater detail in the following paragraphs, the antenna arrangement **12** includes at least a part of the cover **20**.

[0056] FIG. **2** illustrates a schematic diagram of an apparatus **22** according to various examples. The apparatus **22** includes a first cover member **24**, a first feed point **26**, and a second feed point **28**.

[0057] The first cover member **24** is at least a part of the cover **20** illustrated in FIG. **1** and is configured to define an exterior surface of the electronic device **10** and may be, for example, a bezel of a mobile cellular telephone or tablet computer. The first cover member **24** includes a first conductive portion **30** and may also include other portions (such as a non-conductive coating on the exterior of the first conductive portion **30** for example).

[0058] The first conductive portion **30** defines at least a first edge **32** and a second edge **34** of the electronic device **10**. The first edge **32** is shorter than the second edge **34** and defines an aperture **36** therein. The aperture **36** may be defined at any location along the first edge **32** and may be formed in the centre of the first edge **32** for example. The electronic device **10** may include circuitry (not illustrated in FIG. **2**) within the aperture **36**. For example, a universal serial bus (USB) connector may be positioned within the aperture **36** so that the aperture becomes filled with the USB connector.

[0059] The aperture **36** may be considered to form a slot in the first edge **32** that separates the first conductive portion **30** into a first part $\mathbf{30}_1$ and a second separate part $\mathbf{30}_2$. The first part $\mathbf{30}_1$ is provided on a first side of the aperture **36** and has a first end **38** adjacent the aperture **36** and a second opposite end **40**. The second part $\mathbf{30}_2$ is provided on a second side of the aperture **36** and has a first end **42** adjacent the aperture **36** and a second opposite end **44**. The second end **40** of the first part $\mathbf{30}_1$ and the second end **44** of the second part $\mathbf{30}_2$ are connected to ground **46**.

[0060] In some examples, the second end **40** of the first part $\mathbf{30}_1$ and the second end **44** of the second part $\mathbf{30}_2$ may be connected together so that the first conductive portion **30** forms a ring having an aperture therein. In these examples, the first part $\mathbf{30}_1$ is connected to ground **46** at a location between the first end **38** and the second end **40**. Similarly, the second part $\mathbf{30}_2$ is connected to ground **46** at a location between the first end **42** and the second end **44**.

[0061] The first feed point **26** is coupled to the radio frequency circuitry **14** (illustrated in FIG. **1**) to receive signals from the radio frequency circuitry **14** and/or to provide signals to the radio frequency circuitry **14**. The first feed point **26** may be directly coupled to the radio frequency circuitry **14** (that is, the coupling does not include any intervening components), or may be coupled to the radio frequency circuitry **14** via one or more components (such as one or more impedance matching networks).